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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,384	02/17/2004	Francis Lau	GTI-1519	1625

33058 7590 04/03/2007
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EXAMINER

PATEL, VINIT H

ART UNIT	PAPER NUMBER
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1764

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/780,384

Applicant(s)

LAU ET AL.

Examiner

Vinit H. Patel

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 24-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group I, claims 1-23, in the reply filed on January 16, 2007 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-12 and 14-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Wachsmann et al, USP 6235417.

Regarding the following claims, Wachsmann discloses:

1. An apparatus comprising (Fig. 1): a carbonaceous material reactor vessel (Fig. 1) having a carbonaceous material inlet (Feed), an hydrogen-rich gas outlet (H₂), a retentate gas outlet (Higher value products), a reaction zone containing a carbonaceous material (Fig. 1), and a product gas zone containing reaction product gas (Fig. 1); and at least one permeable hydrogen-selective membrane (Fig. 1) disposed within said carbonaceous material reactor vessel (Fig. 1) and having a first side in contact with said reaction product gas and an opposite second side in contact with an hydrogen-rich gas (Fig. 1).
2. An apparatus in accordance with claim 1, wherein said carbonaceous material reactor vessel is a gasification reactor vessel (C1/L13-20).

3. An apparatus in accordance with claim 2, wherein said at least one permeable hydrogen-selective membrane is at least one of proton conductive and electron conductive (Abstract).

4. An apparatus in accordance with claim 3, wherein said at least one permeable hydrogen-selective membrane is proton conductive and electron conductive (C3/L1-19).

5. The manner of operating an apparatus does not differentiate the apparatus from the prior art. See MPEP 2114.

6. An apparatus in accordance with claim 2, wherein said permeable hydrogen-selective membrane comprises a membrane material selected from the group consisting of Pd, Pd--Ag alloy, Pd--Cu alloy, perovskite-type ceramic materials, composites of Pd and ceramic materials, and combinations thereof (C3/L1-55).

7. An apparatus in accordance with claim 2, wherein said permeable hydrogen-selective membrane comprises a ceramic material of perovskite oxide having a formula $A_{1-x}A'_x B_{1-y}B'_y O_{3-z}$ where A is selected from the group consisting of Ba, Sr, Ca and Mg, A' is selected from the group consisting of La, Pr, Nd, Gd, and Yb, B and B' are selected from the group consisting of Ce, Nd, Sm, Eu, Gd, Tm, Yb and Y, O is oxygen, x and y are numbers in a range of 0 to 1, and z is a number sufficient to neutralize a charge in said perovskite oxide (C3/L1-55).

8. An apparatus in accordance with claim 2, wherein said at least one permeable hydrogen-selective membrane is disposed within a membrane module disposed within said gasification reactor vessel (Fig. 1).

9. An apparatus in accordance with claim 8, wherein said at least one permeable hydrogen-selective membrane is in one of a sheet form and a tubular form (Fig. 1, showing a tube and sheet configuration).

10. An apparatus in accordance with claim 6, wherein said perovskite-type ceramic material comprises an electron conductive metal (C3/L1-20).

11. An apparatus in accordance with claim 10, wherein said electron conductive metal is selected from the group consisting of Ni, Pd, Pt and combinations thereof (C3/L1-20).

12. An apparatus in accordance with claim 8, wherein a solid particle, impermeable-gas permeable protective sheath is disposed around said membrane module (Fig. 1, sheath is impermeable to carbonaceous material).

14. An apparatus in accordance with claim 1, wherein said carbonaceous material reactor vessel is a gas phase reactor vessel (C3/L28-35, disclosing the operation of a gas-phase reactor).

15. An apparatus in accordance with claim 14, wherein said at least one permeable hydrogen-selective membrane is at least one of proton conductive and electron conductive (C3/L1-19).

16. An apparatus in accordance with claim 15, wherein said at least one permeable hydrogen-selective membrane is proton conductive and electron conductive (C3/L1-19).

17. The manner of operating an apparatus does not differentiate the apparatus from the prior art. See MPEP 2114.

18. An apparatus in accordance with claim 14, wherein said permeable hydrogen-selective membrane comprises a membrane material selected from the group consisting of perovskite-type ceramic materials, composites of Pd and ceramic materials, and combinations thereof (C3/L1-55).

19. An apparatus in accordance with claim 18, wherein said permeable hydrogen-selective membrane comprises a ceramic material of perovskite oxide having a formula $A_{1-x}A'_xB_{1-y}B'_yO_{3-z}$ where A is selected from the group consisting of Ba, Sr, Ca and Mg, A' is selected from the group consisting of La, Pr, Nd, Gd, and Yb, B and B' are selected from the group consisting of Ce, Nd, Sm, Eu, Gd, Tm, Yb and Y, O is oxygen, x and y are numbers in a range of 0 to 1, and z is a number sufficient to neutralize a charge in said perovskite oxide (C3/L1-55).

20. An apparatus in accordance with claim 14, wherein said at least one permeable hydrogen-selective membrane is disposed within a membrane module disposed within said gas phase reactor vessel (C3/L28-35, disclosing the operation of a gas-phase reactor).

21. An apparatus in accordance with claim 20, wherein said at least one permeable hydrogen-selective membrane is in one of a sheet form and a tubular form (Fig. 1, showing a tube and sheet configuration).

22. An apparatus in accordance with claim 18, wherein said perovskite-type ceramic material comprises an electron conductive metal (C3/L1-19).

23. An apparatus in accordance with claim 22, wherein said electron conductive

metal is selected from the group consisting of Ni, Pd, Pt and combinations thereof (C3/L1-20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Wachsman et al, USP 6235417 in view of Keskar et al., USP 6066307.

Regarding the following claims:

13. Wachsman discloses the apparatus in accordance with claim 2, but not wherein the gasification reactor vessel is a fluidized bed gasification reactor. Keskar disclose that it is favorable to utilize a fluidized bed as a gasification reactor with a membrane reformer (C2/L19-30), and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wachsman with Keskar to utilize a fluidized bed as such modification would result in improved rates of reaction for the production of gasification products (C2/L19-30).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gottzmann et al., USP 6139810 and Prasad et al., USP 6153163.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinit H. Patel whose telephone number is (571) 272-0856. The examiner can normally be reached on 9:00 am - 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

vhp



GLENN A. CALDAROLA
PRIMARY EXAMINER
~~GROUP 1100~~

